

**Work Order ID 52787**

October 14, 2009 10:42:39 AM



Page 1

Item ID: D3391-021

Revision ID: H

Item Name: Fwd Tube Assembly

Start Date: 14/10/2009 Start Qty: 1.00

Required Date: 02/11/2009 Req'd Qty: 1.00

Reference:

Approvals:

Process Plan: *BS*Date: *09-10-14*

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

Draw Nbr

Revision Nbr

D3391

Rev H

100

0.00



Skidtubes

Skidtubes

Memo

0.00

Skidtubes

Cut extrusion to 46.52 +0.010 -0.020

*DP 9-10-14*

110

0.00



BENDING MACHINE - SKIDTUBES

CNC Bend 1

Memo

0.00

CNC Delta 100 Bender

Bend as per Dwg D3391 Using Bend Prog 3391021

*DP 9-10-14*

120

0.00



QC5- Inspect part completeness to step on W/O

QC

Memo

0.00

Quality Control

*2) 8 or 10/15**(+2)**h2 6.875"  
L = 12.9"*

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Item ID: D3391-021

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Start Date: 14/10/2009 Start Qty: 1.00

Required Date: 02/11/2009 Req'd Qty: 1.00

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start  
Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130  HAAS 1 HAAS CNC vertical machine #1	HAAS CNC VERTICAL MACHINING #1  Memo 1-Machine as per Folio FA590 Rev. <u>F</u> & Dwg D3391 Rev. <u>H</u> Identify as D3391-1 2-Deburr	0.00  0.00				<u>1</u>	<u>0</u>		
140  QC Quality Control	QC2- Inspect parts off machine FAI/FAIB  Memo	0.00  0.00				<u>1</u>	<u>0</u>		
150  Mill Conv Conventional Milling Machine	CONVENTIONAL MILLING MACHINE  Memo Drill X1 Aft cap as per Dwg D3391 .1875" dia	0.00  0.00				<u>1</u>	<u>0</u>		

Y.A 09/10/21

Y.A 09/10/21

Y.A 09/10/21

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Item ID: D3391-021

Accept



Setup Start



Revision ID: H

Stop



Item Name: Fwd Tube Assembly

Start Date: 14/10/2009 Start Qty: 1.00



Cust Item ID:

Required Date: 02/11/2009 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

160

QC2- Inspect parts off machine FAI/FAIB

0.00

*mf 09/10/21*

QC

Memo

0.00

Quality Control

1 0 \_\_\_\_\_

170

QC8- Inspect parts - second check

0.00

*mf 09/10/21*

QC

Memo

0.00

Quality Control

1 0 \_\_\_\_\_

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Item ID: D3391-021

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Start Date: 14/10/2009 Start Qty: 1.00

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QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start  
Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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180



Skidtubes

Skidtubes

Skidtubes

Memo

0.00

0.00

1-Drill float bag holes as per Dwg D3391 using DT8798(Do not open tow cap holes to finish size)  
(ONLY DRILL HOLES MARKED "A")

2-Drill Remaining two holes for tow cap using DT 8819 Locating off of .1875" holes drilled in previous step

3-Open tow cap holes to .208" as per Dwg D3391

4-Open Tow Ring hole to .640" as per Dwg D3391

5- open float bag holes 0.328" and counter sink as per dwg D3391

6-Deburr & Scribe Batch number Inside aft end.

7-Transfer drill D3391-021 with D3391-023

MB 09-10-22

1 H 9/10/27

190



QC

Quality Control

QC5- Inspect part completeness to step on W/O

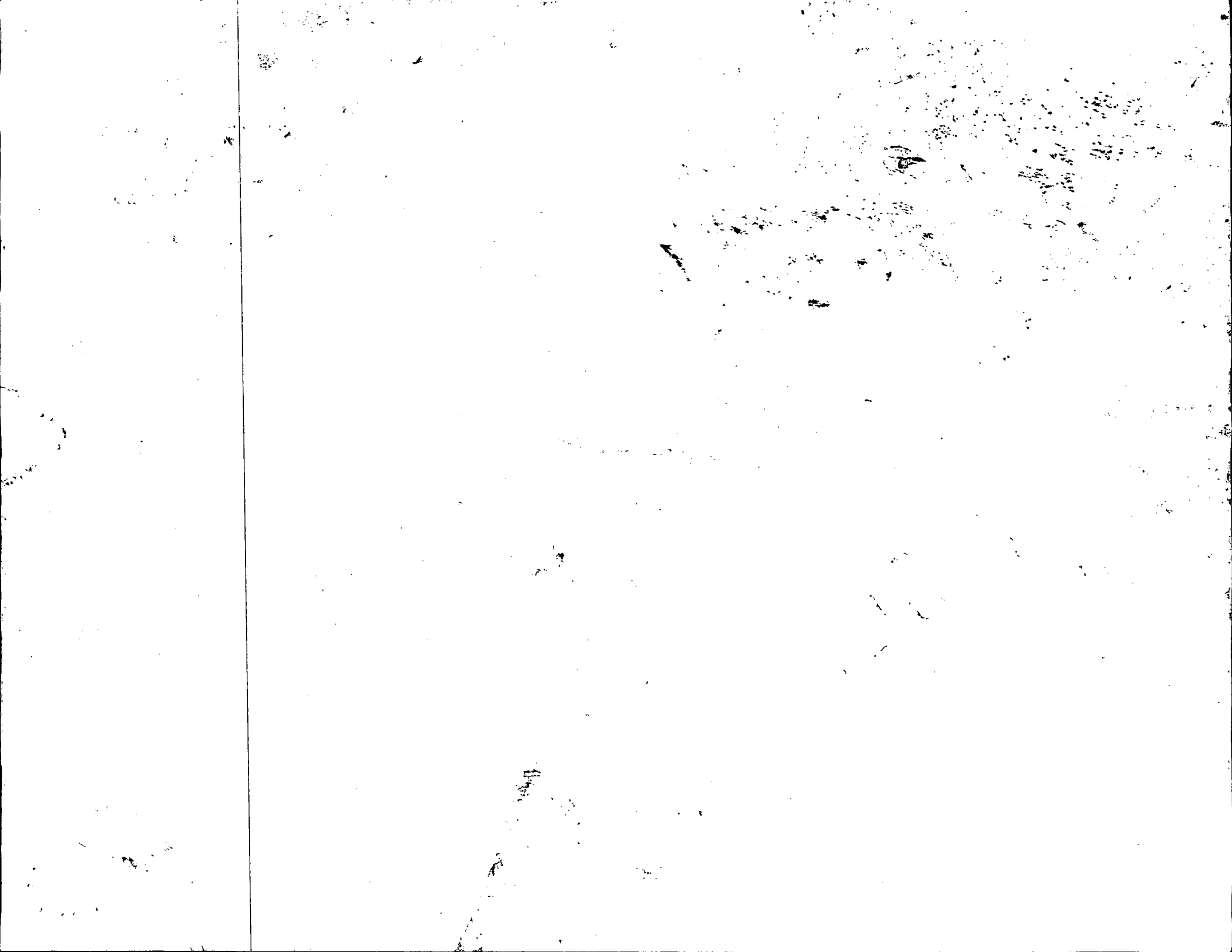
Memo

0.00

0.00

2) 809/10/27

(40) /



**Work Order ID 52787**

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Item ID: D3391-021

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Setup Start



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Stop



Item Name: Fwd Tube Assembly

Start Date: 14/10/2009 Start Qty: 1.00



Cust Item ID:

Required Date: 02/11/2009 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

200

Chemical Conversion Coat per QSI005 4.1

0.00



HandFinish

Memo

0.00

Hand Finishing

1 1 9/10/27

210

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

9-10-28

220

Skidtubes

0.00



Skidtubes

Memo

0.00

Skidtubes

1-instal spacers as per dwg D3391  
A/R Magnabond 6398 batch: m12417  
exp. date: 11/1/30  
cure time 12hrs. as per QSI015  
2- grind crossbolt flush  
3-back drill crossbolt if necessary

10 2 18/11 09-10-28

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Item ID: D3391-021

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Item Name: Fwd Tube Assembly

Start Date: 14/10/2009 Start Qty: 1.00



Cust Item ID:

Required Date: 02/11/2009 Req'd Qty: 1.00

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230  QC Quality Control	QC5- Inspect part completeness to step on W/O  Memo	0.00 27 8 09/10/09 0.00				(40)	/		
240  Powdercoat Powder Coating	White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum M112148 Memo START TIME: 1:15 OVEN TEMPERATURE: 320° FINISH TIME: 1:45	0.00 PR 09-11-2 0.00				①			
250  QC Quality Control	QC3- Inspect Part Finish  Memo	0.00 => M 09/12/09 0.00				(X1)	/		

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Item ID: D3391-021

Accept



Setup Start



Revision ID: H

Stop



Item Name: Fwd Tube Assembly

Start Date: 14/10/2009 Start Qty: 1.00



Cust Item ID:

Required Date: 02/11/2009 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

259

0.00



Skidtubes

Skidtubes

Memo

0.00

Skidtubes

\*\*\*\* install D3591-1 spacer as per DS19364 \*\*\*\*

=> M1 09/12/02

21 d

260

0.00



Identify as per dwg & Stock Location: B53517

Packaging

Memo

0.00

Packaging

=> M1 09/12/02

280

0.00



QC21- Final Inspection - Work Order Release

QC

Memo

0.00

Quality Control

09/12/07

u 09/12/03



# Picklist Print

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Page 1

Work Order ID: 52787

Parent Item: D3391-021RevH

Parent Item Name: Fwd Tube Assembly

Comments:

Start Date: 14/10/2009

Required Date: 02/11/2009

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D6013-047RevA		Manufactured	No			100	Each	63.0000	1.0000			

Skidtube Material

Warehouse  
Location

Loc Qty

Loc Code

Main Warehouse

LG

63

23935

6

26547

57

260

Each

163.0000

4.0000

D3670-4-200RevA

Manufactured

No



SPACER

Warehouse  
Location

Loc Qty

Loc Code

Main Warehouse

ST

163

46106

4

47122

32

48198

42

48269

85

HC MB 09-10-28

# Picklist Print

Page 2

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Work Order ID: 52787



Parent Item: D3391-021RevH



Parent Item Name: Fwd Tube Assembly

Start Date: 14/10/2009

Required Date: 02/11/2009

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D3401-041RevB		Manufactured	No			260	Each	24.0000	1.0000			
Tow Cap Assembly												

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST	24	
36216	1	
41931	7	
46029	16	

xl 09/12/02

D3564-13RevD Manufactured No



260 Each 64.0000 1.0000



Wearshoe

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
FP17	52	
51611	33	
52059	19	
Main Warehouse		
ST	12	
45409	2	
46495	10	

xl 09/12/07

# Picklist Print

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Work Order ID: 52787



Parent Item: D3391-021RevH



Parent Item Name: Fwd Tube Assembly

Start Date: 14/10/2009

Required Date: 02/11/2009

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D3566-13RevC		Manufactured	No			260	Each	41.0000	1.0000			
Gasket												

Warehouse Loc Qty Loc Code

Location

Main Warehouse

FP

39

51606

39

Main Warehouse

ST

2

45717

1

50265

1

AN960C10L

Purchased

No

260

Each

4,772.000 10.0000



washer

Warehouse

Loc Qty

Loc Code

Location

OFFSHORE

FG

100

103585

100

Main Warehouse

ST

4672

112116

1009

112612

3663

xl 110912102

x10 110912102

# Picklist Print

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Parent Item: D3391-021RevH



Parent Item Name: Fwd Tube Assembly

Start Date: 14/10/2009

Required Date: 02/11/2009

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AN3C4A 		Purchased	No			260	Each	2,216.000	10.0000			
BOLT												

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

1113121

x10 11/09/12/07

2216

112082

14

112314

40

112720

162

112724

500

112794

1000

112829

500

D3672-1RevB

Manufactured

No

260

Each

2,060.000

4.0000



Phenolic Washer

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

1560

39275

19

42329

19

47628

522

52505

1000

Main Warehouse

ST117

500

51674

500

x4 11/09/12/07

# Picklist Print

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Parent Item Name: Fwd Tube Assembly

Start Date: 14/10/2009

Required Date: 02/11/2009

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AELS-1032-130 		Purchased	No			260	Each	0.0000	2.0000			
INSERT					M110528					(12) 09/12/02		X
AELS-1032-225 		Purchased	No		M110768	260	Each	0.0000	10.0000			
INSERT										(10) 09/12/02		X



SHOP COPY

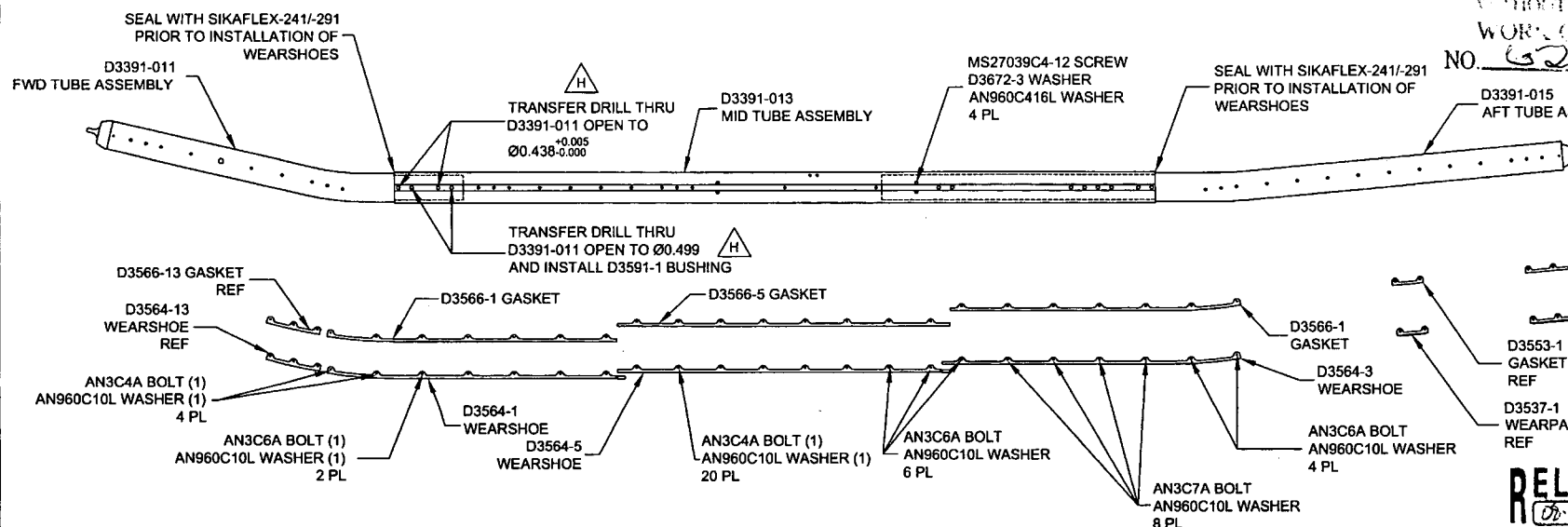
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ENGINEERING  
UNCONTROLLED COPY

SUBJECT TO AMENDMENT

WORK ORDER

NO. 62787

D3391-015  
AFT TUBE ASSEMBLY

D3391-041 ASSEMBLY

## D3391-041 FLOAT SKIDTUBE ASSEMBLY PARTS LIST

QTY	PART NUMBER	DESCRIPTION
X	D3391-041	FLOAT SKIDTUBE ASSEMBLY
1	D3391-011	FWD TUBE ASSEMBLY
1	D3391-013	MID TUBE ASSEMBLY
1	D3391-015	AFT TUBE ASSEMBLY
1	D3564-1	WEARSHOE
1	D3564-3	WEARSHOE
1	D3564-5	WEARSHOE
2	D3566-1	GASKET
1	D3566-5	GASKET
2	D3591-1	BUSHING
4	D3672-3	WASHER
24	AN3C4A	BOLT
12	AN3C6A	BOLT
8	AN3C7A	BOLT
44	AN960C10L	WASHER
4	MS27039C4-12	SCREW
4	AN960C416L	WASHER

## GENERAL NOTES

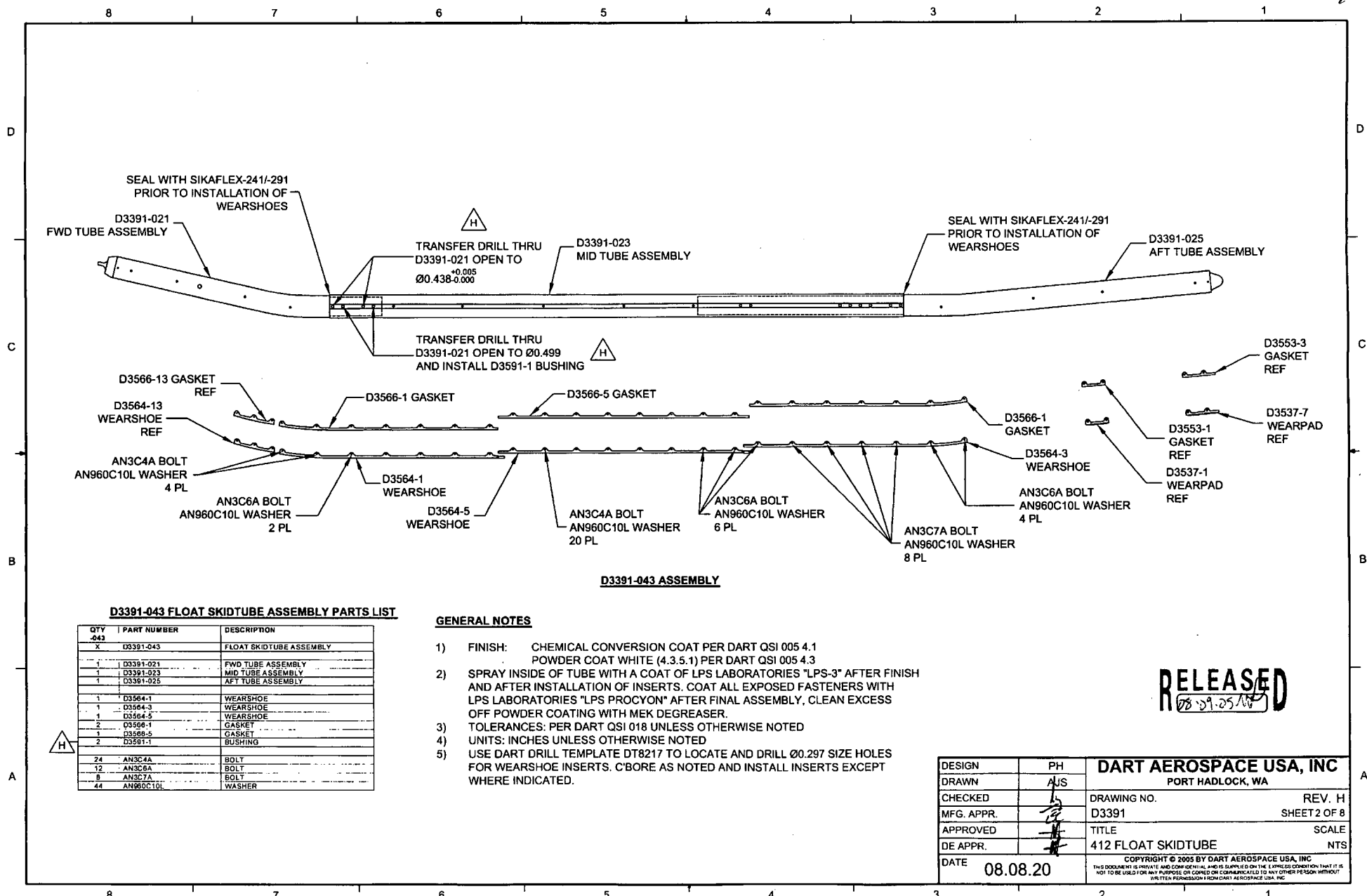
- 1) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
- 2) SPRAY INSIDE OF TUBE WITH A COAT OF LPS LABORATORIES "LPS-3" AFTER FINISH  
AND AFTER INSTALLATION OF INSERTS. COAT ALL EXPOSED FASTENERS WITH  
LPS LABORATORIES "LPS PROCYON" AFTER FINAL ASSEMBLY, CLEAN EXCESS  
OFF POWDER COATING WITH MEK DEGREASER.
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) USE DART DRILL TEMPLATE DT8217 TO LOCATE AND DRILL Ø0.297 SIZE HOLES  
FOR WEARSHOE INSERTS. C'BORE AS NOTED AND INSTALL INSERTS EXCEPT  
WHERE INDICATED.

H	DRAWING UPDATED TO CURRENT STANDARDS. SHT 1 PL ADDED D3591-1 BUSHING. 2N C6 Ø0.438 DIM WAS 4 PL. ADDED Ø0.499 DIM AND D3591-1 BUSHING. SHT 2 PL ADDED D3591-1 BUSHING. 2N C6 Ø0.438 DIM WAS 4 PL. ADDED Ø0.499 DIM AND D3591-1 BUSHING. (FOR FURTHER INFO SEE DSI 9364 & NCR 08-074)		AJS	08.08.20
G	REPLACE NAS INSERTS W/ AELS INSERTS SWITCH TO D3670-XXXX SPACERS FOR INSTALLING FLOAT BAGS, DWG REORGANIZED FOR CLARITY		DC	07.07.31
F	ADD SS WEARSHOE, GASKET REMOVE FWD SADDLE HOLE -011/-021		PH	07.01.18
E	CHANGE TOLERANCE, EASE MANUFACTURE		PH	06.04.25
D	UPDATE TOLERANCE, CHANGE HOLE SIZE		PH	06.01.23
C	LENGTHEN AFT EXTENSION		PH	05.09.27
B	DRAWING UPDATES		PH	05.06.10
A	NEW ISSUE		PH	05.02.07
REV.			DESCRIPTION	BY DATE
DESIGN		PH	DART AEROSPACE USA, INC PORT HADLOCK, WA	
DRAWN		AJS		
CHECKED			DRAWING NO.	REV. H
MFG. APPR.			D3391	SHEET 1 OF 8
APPROVED			TITLE	SCALE
DE APPR.			412 FLOAT SKIDTUBE	NTS
DATE		08.08.20		

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w/o 52787



**D3391-043 ASSEMBLY**

**D3391-043 FLOAT SKIDTUBE ASSEMBLY PARTS LIST**

QTY	PART NUMBER	DESCRIPTION
X	D3391-043	FLOAT SKIDTUBE ASSEMBLY
1	D3391-021	FWD TUBE ASSEMBLY
1	D3391-023	MID TUBE ASSEMBLY
1	D3391-025	AFT TUBE ASSEMBLY
1	D3564-1	WEARSHOE
1	D3564-3	WEARSHOE
1	D3564-5	WEARSHOE
2	D3566-1	GASKET
1	D3566-5	GASKET
2	D3566-13	BUSHING
24	AN3C4A	BOLT
12	AN3C6A	BOLT
8	AN3C7A	BOLT
44	AN960C10L	WASHER

**GENERAL NOTES**

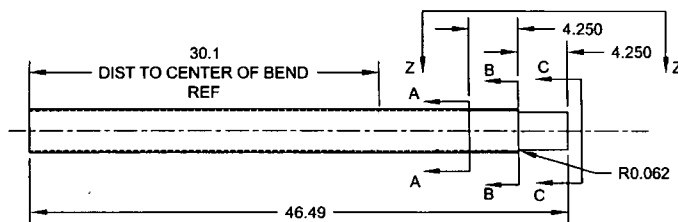
- 1) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
- 2) SPRAY INSIDE OF TUBE WITH A COAT OF LPS LABORATORIES "LPS-3" AFTER FINISH AND AFTER INSTALLATION OF INSERTS. COAT ALL EXPOSED FASTENERS WITH LPS LABORATORIES "LPS PROCYON" AFTER FINAL ASSEMBLY, CLEAN EXCESS OFF POWDER COATING WITH MEK DEGREASER.
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) USE DART DRILL TEMPLATE DT8217 TO LOCATE AND DRILL Ø0.297 SIZE HOLES FOR WEARSHOE INSERTS. C'BORE AS NOTED AND INSTALL INSERTS EXCEPT WHERE INDICATED.

**RELEASED**  
08-09-25/16

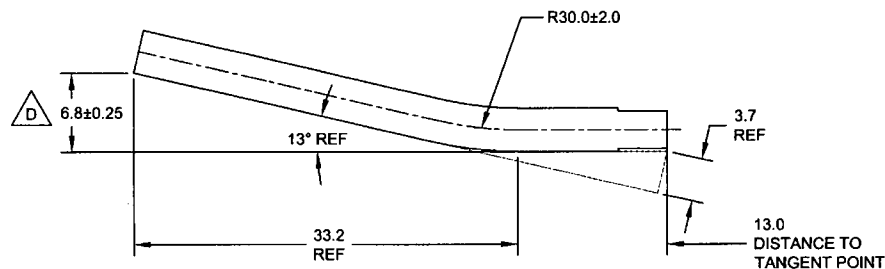
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CHECKED		DRAWING NO.	REV. H
MFG. APPR.		D3391	SHEET 2 OF 8
APPROVED		TITLE	SCALE
DE APPR.		412 FLOAT SKIDTUBE	NTS
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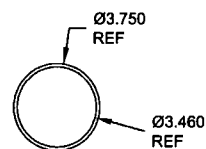
W/O 52787



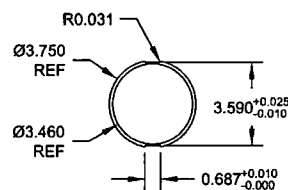
**D3391-1 CUTTING DETAIL**  
(MAKE FROM D6013-047 SKIDTUBE MATERIAL)



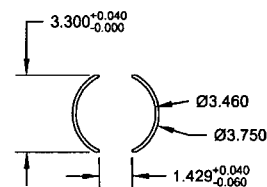
**D3391-011/-021 BENDING DETAIL**  
(MAKE FROM D3391-1)



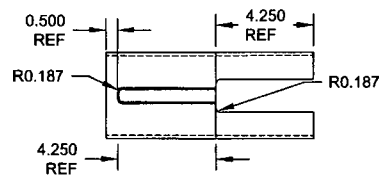
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SCALE 2X



**SECTION B-B**  
SCALE 2X



**SECTION C-C**  
SCALE 2X

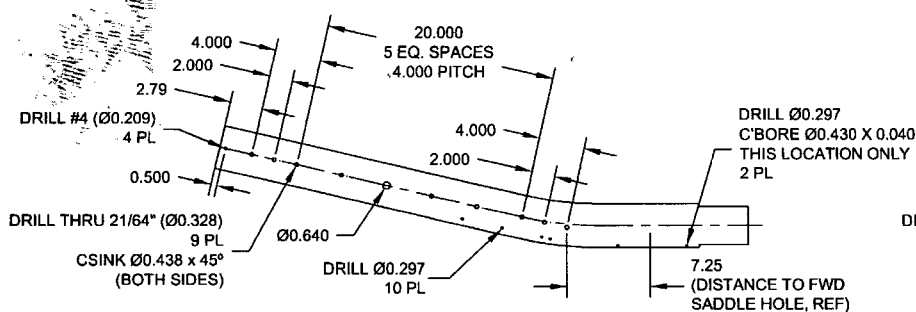


**VIEW Z-Z**  
SCALE 2X

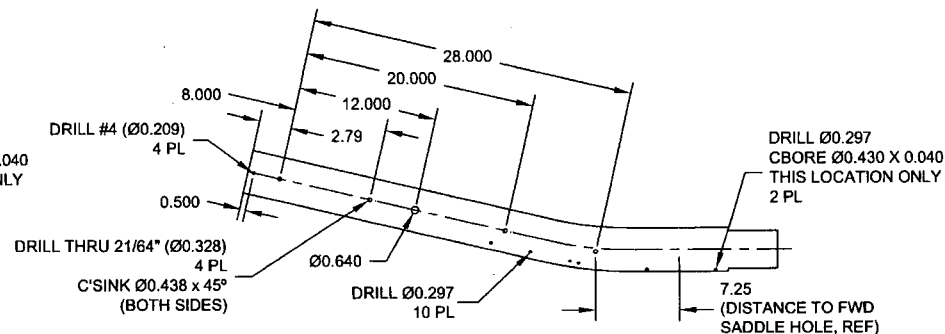
**RELEASED**

DESIGN	PH	<b>DART AEROSPACE USA, INC</b>	
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CHECKED		DRAWING NO.	REV. H
MFG. APPR.		D3391	SHEET 3 OF 8
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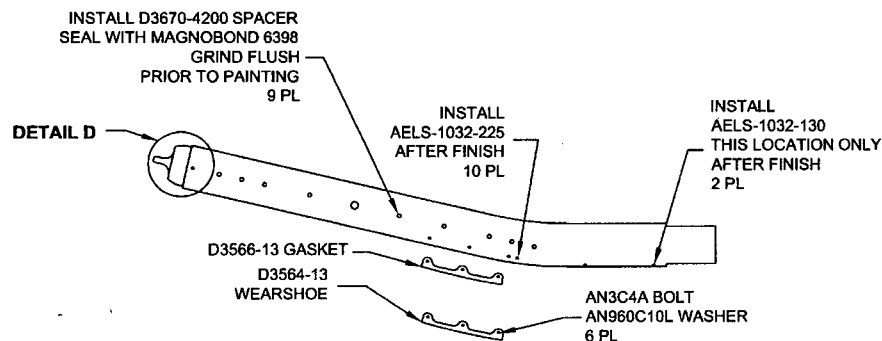
W/O 52787



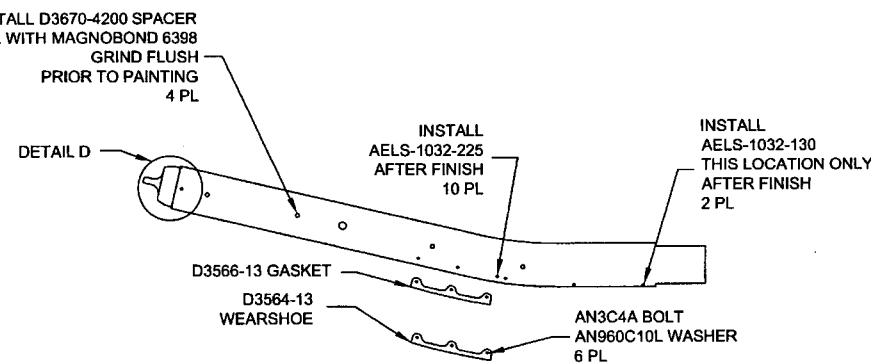
**D3391-011 DRILLING DETAIL**



**D3391-021 DRILLING DETAIL**



**D3391-011 ASSEMBLY DETAIL**

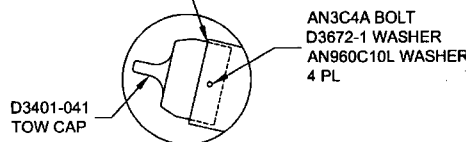


**D3391-021 ASSEMBLY DETAIL**

**D3391-011/-021 FWD TUBE ASSEMBLY PARTS LIST**

QTY - 011	QTY - 021	PART NUMBER	DESCRIPTION
X	X	D3391-011	FWD TUBE ASSEMBLY
		D3391-021	FWD TUBE ASSEMBLY
1	1	D6013-047	FWD TUBE
1	1	D3401-041	TOW CAP
1	1	D3564-13	WEARSHOE
1	1	D3566-13	GASKET
9	4	D3670-4200	SPACER
4	4	D3672-1	WASHER
10	10	AN3C4A	BOLT
10	10	AN960C10L	WASHER
2	2	AELS-1032-130	INSERT
10	10	AELS-1032-225	INSERT

SEAL WITH  
SIKAFLEX-241/-291

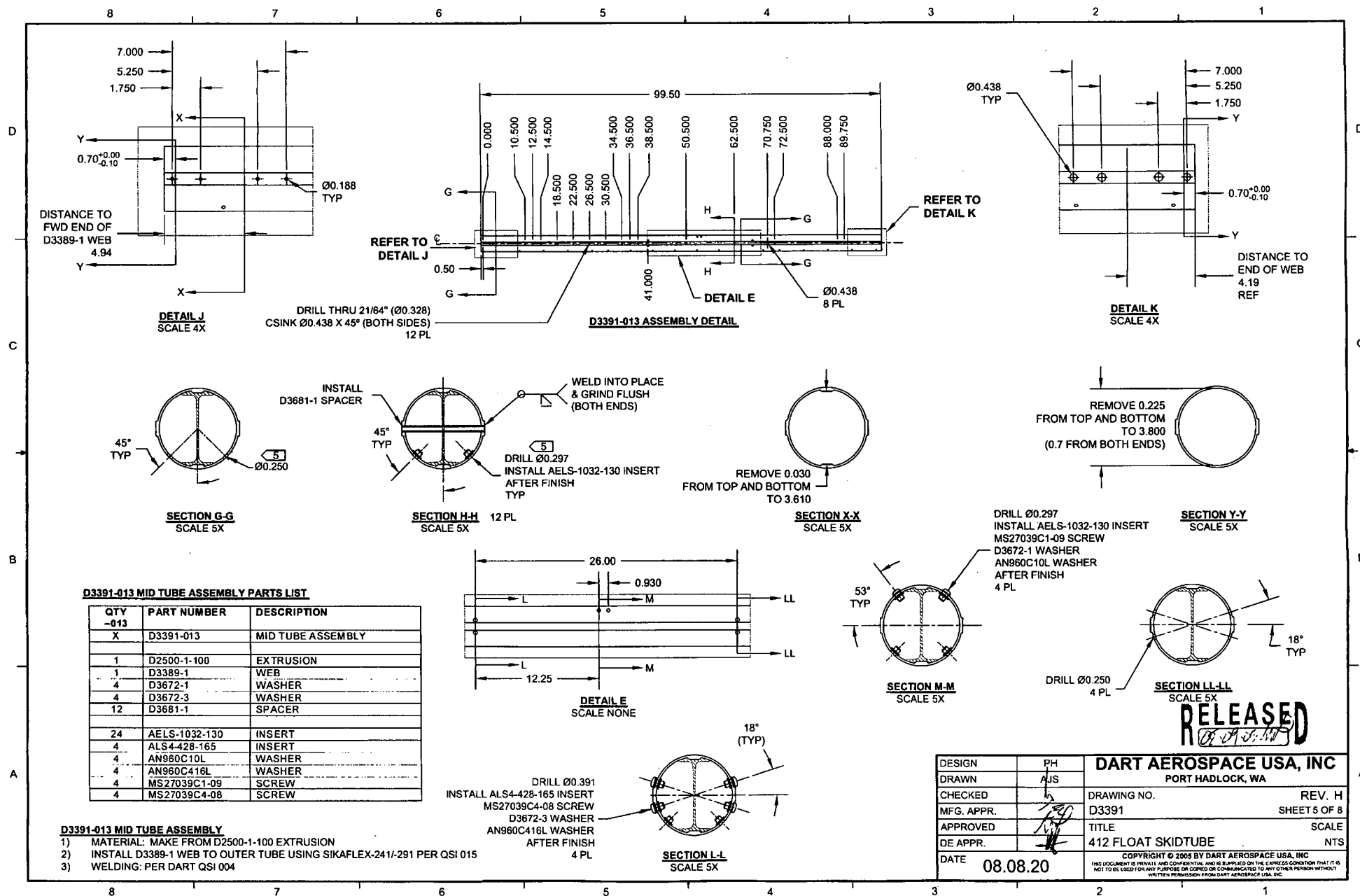


**DETAIL D**  
SCALE 2X


**RELEASED**  
08-09-05-11

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MFG. APPR.		D3391	SHEET 4 OF 8
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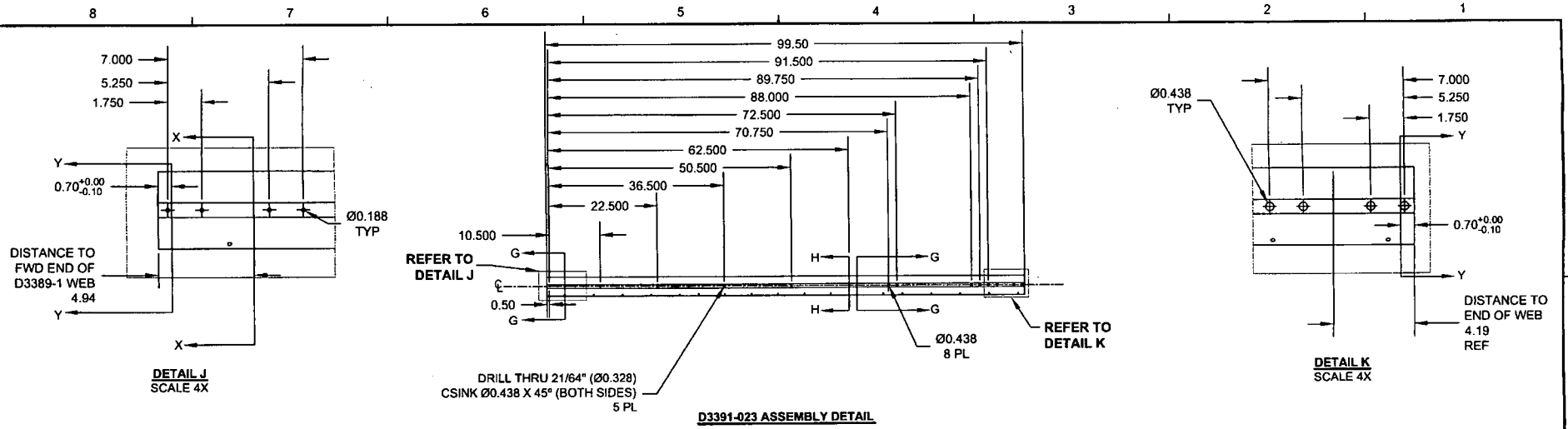
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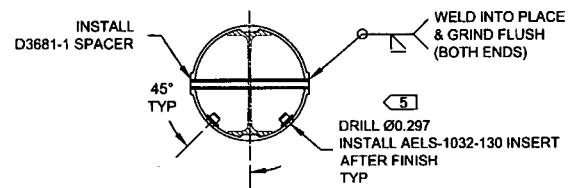
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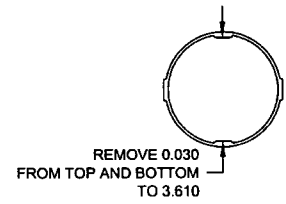
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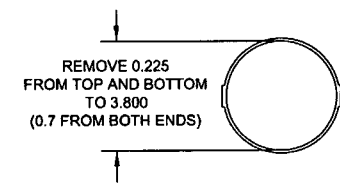
SECTION G-G  
SCALE 5X



SECTION H-H  
SCALE 5X



SECTION X-X  
SCALE 5X



SECTION Y-Y  
SCALE 5X

**D3391-023 MID TUBE ASSEMBLY PARTS LIST**

QTY -	PART NUMBER	DESCRIPTION
023		
X	D3391-023	MID TUBE ASSEMBLY
1	D2500-1-100	EXTRUSION
1	D3389-1	WEB
5	D3681-1	SPACER
20	AELS-1032-130	INSERT

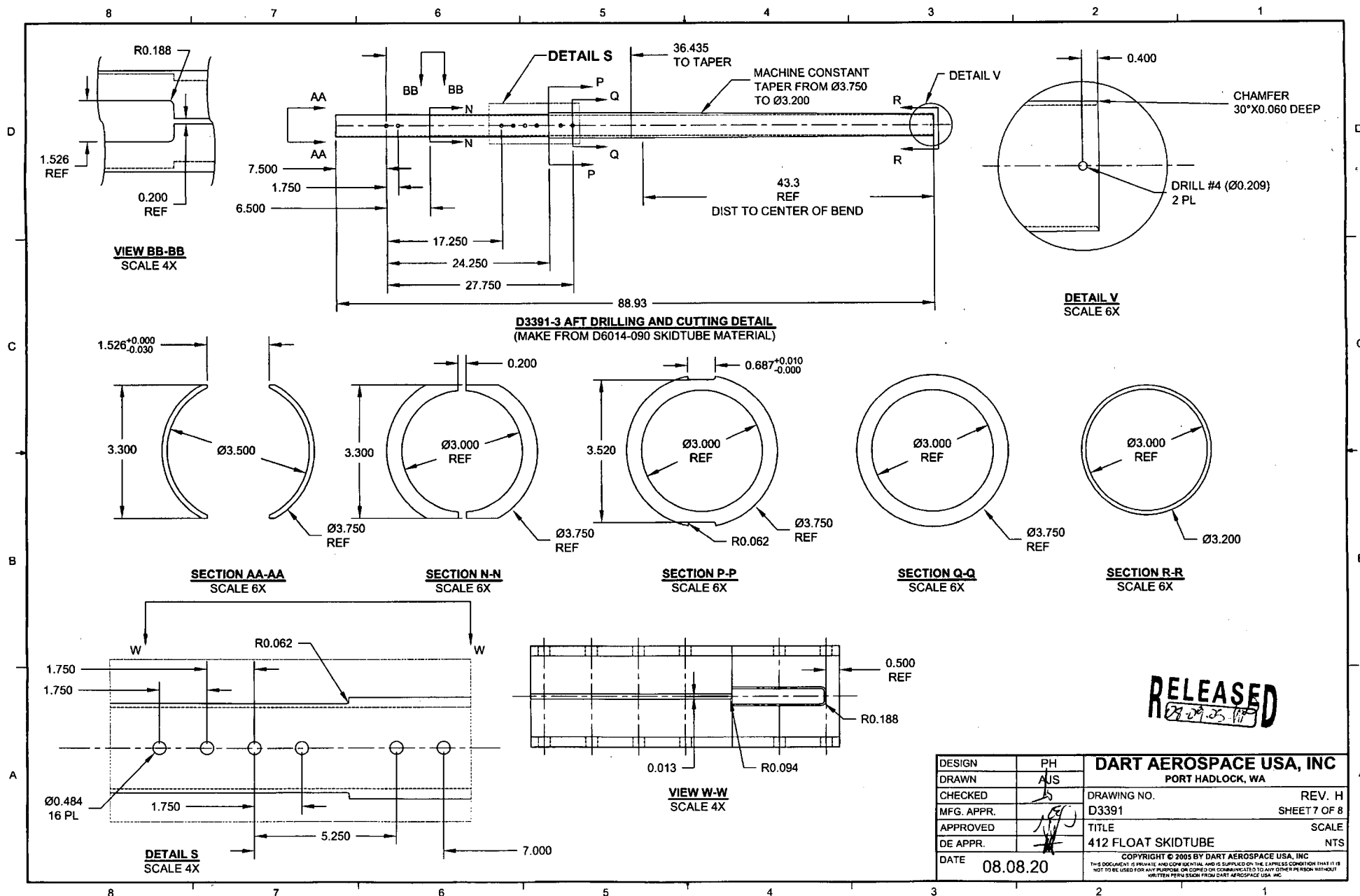
**D3391-023 MID TUBE ASSEMBLY**

- 1) MATERIAL: MAKE FROM D2500-1-100 EXTRUSION
- 2) INSTALL D3389-1 WEB TO OUTER TUBE USING SIKAFLEX-241/291 PER QSI 015
- 3) WELDING: PER DART QSI 004

**RELEASED**  
08-24-05-11

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